REMARKS

Claims 1-21 were presented for examination, and claims 1-21 are rejected. In the current amendment, claims 17 and 19 have been amended. No new matter has been introduced. Thus, upon entry of the current amendment, claims 1-21 will be presently pending in this application, of which claims 1, 17, 19, 20, and 21 are independent. Applicant submits that pending claims 1-21 are in condition for allowance.

The following comments address all stated grounds of rejection. Applicant urges the Examiner to pass the claims to allowance in view of the remarks set forth below.

Claim Amendments

The preambles of claims 17 and 19 have been amended to address the Examiner's claim rejections under 35 U.S.C. §101 as discussed below. Additionally, Applicant hereby amends claims 17 and 19 to further clarify and appreciate the Applicant's claimed invention. No new matter has been introduced. Applicant submits that the presently pending claims are in condition for allowance.

Claim Rejections under 35 U.S.C. §101

I. Claims 17-19 Rejected under 35 U.S.C. §101

Claims 17-19 are rejected under 35 U.S.C. §101 because the claimed invention is directed towards non-statutory subject manner. Claims 18 is rejected under 35 U.S.C. §101 because it depends from independent claim 17. Applicant respectfully traverses this rejection.

The Examiner rejects claims 17-19 under 35 U.S.C. §101 because the language of the claim raises a question as to whether the claimed invention is directed merely to an abstract idea

that is not tied to a technological art, environment or machine which would produce a concrete, useful and tangible result to form the basis of statutory subject matter under 35 U.S.C. §101. Specifically, the Examiner contends that these claims recite software components for graphical block diagram processing, representing functional descriptive material per se without a tangible embodiment of a computer readable medium or computer implemented method. Applicant respectfully disagrees with the Examiner and contends that claims 17-19 recite statutory subject matter. Nevertheless, claims 17 and 19 are hereby amended to expedite prosecution of this application. As amended, claims 17 and 19 are directed towards a method performed in one or more electronic devices, which has a practical application in the technological arts.

In light of the present amendment, Applicant submits that claims 17-19 recite statutory subject matter. Therefore, Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of claims 17-19 under 35 U.S.C. §101.

Claim Rejections under 35 U.S.C. §103

II. Claims 1-5, 16, 20, and 21 Stand Rejected under 35 U.S.C. §103 as Unpatentable over Kodosky in view of Chang

Claims 1-5, 16, 20, and 21 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 4,901,221 to Kodosky et al. ("Kodosky") in view of U.S. Patent No. 5,627,979 to Chang et al. ("Chang"). Applicant respectfully traverses this rejection.

A. Non-obviousness of Independent Claims 1, 20 and 21

Independent claims 1, 20, and 21 are directed to a method, program and system, respectively. These independent claims recite *a first block receiving a first value indicative of an index into a lookup table, and in the first block, generating information indicative of a location*

of an index value relative to a predefined domain of possible indexed values that define regions. That is, the first block receives a value indicative of an index into a lookup table, and the first block generates information indicative of a location of an index value relative to a predefined domain of possible indexed values that define regions. These claim also recite receiving in a second block the information generated by the first block to determine an output value of a first lookup table. As such, the first block provides information to the second block indicating the location of the index relative to a region in a domain of indexed values. This relative index information is then used by a second block to determine an output value from a lookup table by interpolating the output value from the lookup table based on the information.

Kodosky in view of Chang does not teach or suggest *a first block receiving a first value indicative of an index into a lookup table, and in the first block, generating information indicative of a location of an index value relative to a predefined domain of possible indexed values that define regions.* In the Office Action, the Examiner cites column 8, lines 58-59, and Figure 5 of Kodosky as disclosing *in the first block generating information indicative of the location of the first value relative to a predefined domain of possible indexed values that define regions.* The Examiner indicates this section of Kodosky describes a graphical representation of input controls and output indicators stored in a memory library. Applicant contends that this cited section of Kodosky does not teach or suggest *the first block generating information indicative of the location of the first value relative to a predefined domain of possible indexed values that define regions.*

Instead of describing a block of a block diagram model *generating information indicative of the location of the first value relative to a predefined domain of possible indexed values that define regions*, column 8, lines 58-59, and Figure 5 of Kodosky describe input and output

controls of a front panel editor to provide a user interface for an instrument. Figure 5 of Kodosky represents an illustrative front panel (62, Figure 4, Kodosky) produced with the front panel editor (36', Figure 4, Kodosky) to provide a virtual instrumentation representation of an instrument (see column 8, lines 41-44, Kodosky). As illustrated in Figure 5 of Kodosky, the front panel has a circular turn-dial and a slide switch control for setting input data and a coordinate plane display, i.e., a graph, control for displaying output data (column 8, lines 51-57, Kodosky). As such, the front panel editor of Kodosky does not provide a block in a block diagram model but provides input and output controls for a user interface. Further to this point, Kodosky illustrates the front panel editor separate from the block diagram editor (see 30 and 36, Figure 2; 42 and 46, Figure 3; 30' and 36', Figure 4; 8E and 8C, Figure 19, Kodosky). In Kodosky, the front panel editor does not construct a block in a block diagram model. Rather, the block diagram editor of Kodosky is used to construct a block diagram model while the front panel editor is used to construct a virtual instrumentation user interface. Thus, Kodosky does not teach or suggest *in the first block, generating information indicative of a location of an indexed value relative to a predefined domain of possible index values that define regions.*

Furthermore, the front panel of Figure 5 of Kodosky merely illustrates a graph without plotted data, and a physical control dial and switch. The graph represents a user interface control for displaying output variables (column 8, lines 56-57, Kodosky). Instead of *generating information indicative of a location of an index value relative to a predefined domain of possible indexed values that define regions*, the graph of Kodosky generally displays variable output data relative to a set of axes. Kodosky does not describe a specific relationship of the data to be plotted on the graph. As such, Kodosky does not describe the axes of the graph or the data to be plotted on the graph as representing a predefined domain of possible index values that define

regions, or as indicative of a location of an index value relative to the predefined domain. In addition, the physical control dial and switch of Kodosky merely represent user interface controls for receiving user input. These input controls are designed to provide a user interface for an instrument instead of providing indexing and lookup table operations. Rather than *generating information indicative of a location of an index value relative to a predefined domain of possible index values that define regions*, these input controls receive a user selected input value. Thus, the Examiner cited sections of Kodosky in view of Figure 5 do not teach or suggest *generating information indicative of a location of an index value relative to a predefined domain of possible index values that define regions*.

Additionally, in the Office Action, the Examiner cites in Kodosky an execution subsystem for assigning respective values for one or more input variables (column 3, lines 61-63, Kodosky) as disclosing *in a first block, receiving a first value indicative of an index into a lookup table*. However, this section of Kodosky generally discusses assigning a value to an input variable and executing an executable instruction to produce a value for an output variable. Kodosky does not describe a block receiving a value indicative of an index into a lookup table. As such, Kodosky does not teach or suggest a block that *receives a value of an index into a lookup table,* and the same block *generating information indicative of a location of an index value relative to a predefined domain of possible index values that define regions*.

In the Office Action, the Examiner indicates that Kodosky does not disclose the indexing and lookup features recited in independent claims 1, 20, and 21. The Examiner cites Chang for the purpose of suggesting that one ordinarily skilled in the art might modify Kodosky to incorporate the method of using a lookup table and indexes as taught by Chang into the block diagram data processing taught by Kodosky. However, Applicants contend Chang does not

teach or suggest the use of a lookup table and index as recited in the claimed invention and therefore, does not bridge the deficiencies of Kodosky identified by the Examiner. For example, Kodosky in view of Chang does not teach or suggest *generating information indicative of a location of an index value relative to a predefined domain of possible index values that define regions*. Rather than describing *a location of an index value relative to a predefined domain of possible index values that define regions*, Chang describes an index as a pointer to a record in a conventional database. Chang does not describe a predefined domain of possible index values that define regions, and Chang does not describe a location of an index value relative to the predefined domain. Instead of generating a location of an index value relative to other index values, Chang generates from the database index a pointer to a database record. Furthermore, the predefined domain of possible index values of the claimed invention comprises a list of values, such as a breakpoint data set, that define regions. In contrast, the database index of Chang is a list of pointers to records in the database. As such, Chang fails to bridge the factual deficiencies of the Kodosky reference.

Moreover, there must be motivation or suggestion in the references or in the knowledge of one ordinarily skilled in the art to modify Kodosky in view of Chang. The test for combining references is not what the individual references themselves suggest but rather what the combination of the disclosures as a whole would suggest to one ordinarily skilled in the art. *In re McLaughlin, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).* The references are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures. *In re Bozek, 163 USPQ 545 (CCPA 1969).* In the Office Action, the Examiner indicates one ordinarily skilled in the art would modify Kodosky in view of Chang because one would be motivated to map and access objects from a conventional data store. Applicant respectfully disagrees with the

Examiner and submits that there is no suggestion or motivation in the references of Kodosky and Chang, or in the knowledge of one ordinarily skilled in the art to combine Kodosky in view of Chang.

Kodosky is directed towards a system for modeling a process. In contrast, Chang is directed towards a system for providing a graphical user interface for mapping and accessing objects. Chang only briefly describes indexing as part of conventional data storage technology. Rather than focusing on database indexing, Chang is concerned with handling the differences between conventional data storage technology and object oriented technology by providing a uniform object oriented application programming interface to the scheme of a conventional data storage (see column 4, lines 40-67; column 5, lines 11-20, Chang). The disclosure of Chang suggests to one ordinarily skilled in the art a graphical user interface for mapping an object oriented interface to a database schema while the disclosure of Kodosky suggests to one ordinarily skilled in the art to use a graphical diagram for modeling a process. As such, the disclosures of Kodosky and Chang as a whole do not provide a suggestion or motivation to combine a process modeling system with a graphical schema mapper. One ordinarily skilled in the art at the time of the claimed invention would not be motivated by or find a suggestion in the teachings of the graphical schema mapping of Chang to combine Chang with the teachings of the modeling system of Kodosky to teach or suggest the claimed invention. Thus, there is no suggestion or motivation in the references of Kodosky and Chang, or in the knowledge of one ordinarily skilled in the art to combine Kodosky in view of Chang.

Furthermore, even if one were to combine Kodosky in view of Chang, the combination would not teach or suggest the claimed invention. Combining the modeling system of Kodosky with the graphical user interface for mapping and accessing objects of Chang would produce a

modeling system with a graphical user interface for mapping and accessing objects. The mention of indexing in Chang as part of conventional data storage does not teach or suggest the structure and features of the claimed invention. The indexing of Chang is embedded in the conventional data storage technology. There is no teaching or suggestion in Chang to change conventional database indexing into the index search and interpolated lookup operations of the first block and second block of the claimed invention. As such, even if Kodosky were combined in view of Chang, the combination would not detract from the patentability of the claimed invention.

For at least the above-discussed reasons, Kodosky in view of Chang fails to detract from the patentability of independent claims 1, 20, and 21. Claims 2-5 and 16 depend on and incorporate all the patentable limitations of claim 1. Thus, Kodosky in view of Chang also fails to detract from the patentability of claims 2-5 and 16. Accordingly, Applicant respectfully requests the withdrawal of the Examiner's rejection of claims 1-5, 16, 20, and 21 under 35 U.S.C. §103.

III. Claims Rejected under 35 U.S.C. §103 as Unpatentable over Kodosky in view of Chang in further view of Admitted Prior Art

Claims 6-14 and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kodosky in view of Chang and in further view of Prior Art. Applicant respectfully traverses this rejection.

A. Non-obviousness of Independent Claim 19

Independent claim 19, as amended, is directed to maintaining in a block library an *interpolation block that uses output of one or more pre-lookup index search blocks.* That is, one

or more pre-lookup index search blocks can provide input to the same interpolation block. Also, one pre-lookup index search block can provide input to multiple interpolation blocks. As such, the pre-lookup index search block can efficiently perform the same index search operation and share the output across multiple interpolation blocks.

Kodosky in view of Chang in view of Prior Art does not teach or suggest *an interpolation block that uses output of one or more pre-lookup index search blocks.* The Examiner cites the Prior Art to suggest that one ordinarily skilled in the art might modify Kodosky in view of Chang to maintain the index search block in a block library. However, the Prior Art does not bridge the factual deficiencies of the Kodosky and Chang references. As with Kodosky and Chang, the Prior Art does not teach or suggest *an interpolation block that uses output of one or more pre-lookup index search blocks* as in the claimed invention. As depicted in the Prior Art illustrations of Figures 1A and 1B of this application, the Prior Art uses a look-up table block that does not use the output of one or more pre-lookup index search blocks. Instead, the look-up table block of the Prior Art performs its own index search operations, which is not shared with other look-up table blocks. In contrast and as illustrated in Figure 3, the interpolation block of the claimed invention *uses the output of one or more pre-lookup index search blocks*. Thus, interpolation blocks of the claimed invention can share the output from one or more pre-lookup index search blocks. As such, Kodosky in view of Chang in further view of the Prior Art does not disclose, teach, or suggest an *interpolation block that uses output of one or more pre-lookup index search blocks.*

For at least the above-discussed reasons, Kodosky in view of Chang in further view of the Prior Art fails to teach or suggest an *interpolation block that uses output of one or more pre-*

lookup index search blocks. Therefore, Applicant respectfully requests the Examiner to withdraw the rejection of claim 19 under 35 U.S.C. §103.

B. Non-obviousness of Claims 6-14 Dependent on Patentable Independent Claim 1

As discussed above in connection with the rejection of independent claim 1, Applicant contends that claim 1 is patentable and in condition for allowance. As such, claims 6-14 depended on and incorporate all the patentable limitations of independent claim 1, and thus are also patentable and in condition for allowance. Accordingly, Applicant respectfully requests the Examiner to withdraw the rejection of claims 6-14 under 35 U.S.C. §103.

IV. Claim 15 Rejected under 35 U.S.C. §103 as Unpatentable over Kodosky in view of Chang in further view of McKaskle

Claim 15 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kodosky in view of Chang and in further view of U.S. Patent No. 5,481,741 to McKaskle et al. ("McKaskle"). Applicant respectfully traverses this rejection.

A. Non-obviousness of Dependent Claim 15

In addition to the patentable limitations recited in independent claim 1, dependent claim 15 recites further patentable subject matter of the first block *generating information comprising a breakpoint data set index value and distance fraction value for each dimension and corresponding input value chosen by the user.* That is, the pre-lookup search index block of the present invention determines a breakpoint data set index value and distance fraction for an input value relative to the breakpoint data set. The generated information of the breakpoint data set

index value and distance fraction is provided as input into the interpolation block to determine an output value from a lookup table.

Kodosky in view of Chang in view of McKaskle does not teach or suggest *generating information comprising a breakpoint data set index value and distance fraction value for each dimension and corresponding input value chosen by the user*. The Examiner cites McKaskle to suggest that one ordinarily skilled in the art might modify Kodosky in view of Chang to generate information comprising a breakpoint data set index value and distance fraction value for each corresponding input value. Applicant respectfully disagrees with the Examiner and contends that McKaskle does not teach or suggest these features as recited in claim 15. The Examiner cites column 33, lines 49-52 of McKaskle as describing the breakpoint data set index value of the claimed invention. However, this section of McKaskle describes setting a breakpoint in execution of a virtual instrument for debugging purposes. Setting a breakpoint for a debugger does not equate to using a breakpoint data set for index search operations and interpolation as in the claimed invention. The term breakpoint as used by McKaskle in not analogous to a breakpoint of the claimed invention. A breakpoint in McKaskle refers to setting a stop point in a debugger, while a breakpoint of the breakpoint data set of the claimed invention is a point in a range of values, such as a sample point in a lookup table.

Additionally, the Examiner cites column 62, lines 59-63 of McKaskle as describing a distance fraction value for each dimension. However, this section of McKaskle refers to splitting an array into two arrays and does not describe any distance fraction value for each dimension. The distance fraction value of the claimed invention specifies a normalized distance on an interval corresponding to a region of the predefined domain of index values. The array splitting

described in McKaskle does not equate to a distance fraction value. As such, McKaskle fails to bridge the deficiencies of the Kodosky and Chang references.

For at least the above-discussed reasons, Kodosky in view of Chang in further view of McKaskle fails to teach or suggest an index search block that *generates information comprising a breakpoint data set index value and distance fraction value for each corresponding input value.* Therefore, Applicant respectfully requests the Examiner to withdraw the rejection of claim 15 under 35 U.S.C. §103.

V. Claims 17 and 18 Rejected under 35 U.S.C. §103 as Unpatentable over Kodosky in view of Chang in further view of Prior Art and McKaskle

Claims 17 and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kodosky in view of Chang and Prior art and in further view of McKaskle. Applicant respectfully traverses this rejection.

A. Non-obviousness of Independent Claim 17

Independent claim 17, as amended, is directed towards a method for processing a block diagram model that includes interpolation lookup blocks that perform interpolated table lookup, and are connected to at least one index search block, which performs index search operations. The index search block provides an input value and breakpoint data set to any connected interpolation lookup block. The method includes detecting if the interpolation lookup blocks have shared input values and breakpoint data sets, and interpreting the block diagram model as if the block diagram model included separate index search blocks for each of the interpolated lookup blocks.

Kodosky in view of Chang in view of the Prior Art and in further view of McKaskle does not teach or suggest processing a block diagram model that includes interpolation lookup blocks that have shared input values and breakpoint data sets via an index search block. First, neither Kodosky nor Chang discuss interpolation lookup blocks connected to at least one index search block as in the claimed invention. Furthermore, as the Examiner indicates, Kodosky does not teach or suggest detecting if the interpolation lookup blocks have shared input values and breakpoint data sets. The Examiner cites McKaskle to suggest one ordinarily skilled in the art might modify Kodosky in view of Chang to detect if the interpolation lookup blocks have shared input values and breakpoint data sets. Applicant respectfully disagrees with the Examiner and contends that McKaskle does not teach or suggest this feature of the claimed invention to bridge the factual deficiencies of the Kodosky, Chang, and Prior Art references.

The Examiner cites column 33, lines 49-52 of McKaskle as describing detecting if the interpolation lookup block has shared input values and breakpoint data sets. However, this section of McKaskle describes setting a breakpoint for debugging an executing virtual instrument. The breakpoint feature of McKaskle allows a virtual instrument to exist in different states in order to protect execution of the virtual instrument from edits to the virtual instrument (see column 34, lines 1-5, McKaskle). Setting a breakpoint on the virtual instrument of McKaskle puts the execution of the virtual instrument into a suspended state (see column 33, lines 49-53, McKaskle). In contrast, the breakpoint data set of the claimed invention provides an ordered list of values of length N that defines a set of regions (see page 7, lines 15-23 of this application). Rather than providing an ordered list of values defining a set of regions, the breakpoint of McKaskle stops the execution of the virtual instrument for debugging purposes.

As such, McKaskle fails to bridge the factual deficiencies of the Kodosky, Chang and the Prior art references with respect to this feature of the claimed invention.

Additionally, in the Office Action, the Examiner indicates that Kodosky does not teach or suggest interpreting the block diagram model as if the block diagram model included separate index search blocks for each of the interpolated lookup blocks. The Examiner cites Prior Art to suggest one ordinarily skilled in the art might modify Kodosky in view of Chang to interpret the block diagram model as if the block diagram model included separate index search blocks and interpolated lookup blocks. The Examiner cites page 1, lines 25-26 of this application as describing this feature of the claimed invention. However, this section of the application cites a single n-dimensional interpolation block that performs an index search operation and interpolated table lookup. As such, the n-dimensional interpolation block as cited by the Examiner is not connected to an index search block to perform its operations, and thus cannot share input values and breakpoint data sets generated by an index search block. Therefore, the Prior Art cited by the Examiner fails to bridge the factual deficiencies of the Kodosky and Chang references with respect to this feature of the claimed invention.

For at least the above-discussed reasons, Kodosky in view of Chang and the Prior Art and in further view of McKaskle fails to teach or suggest processing a block diagram model that includes interpolation lookup blocks connected to at least one index search block and have shared input values and breakpoint data sets. Claim 18 depends on and incorporates all the patentable limitations of claim 17. Thus, Kodosky in view of Chang fails to detract from the patentability of claim 18. Accordingly, Applicant respectfully requests the Examiner to withdraw the rejection of claims 17-18 under 35 U.S.C. §103.

CONCLUSION

In view of the amendments and remarks set forth above, Applicant contends each of the presently pending claims in this application is in immediate condition for allowance. Accordingly, Applicant respectfully requests the Examiner to pass the claims to allowance.

If the Examiner deems there are any remaining issues, we invite the Examiner to call the Applicant's Attorney at the telephone number identified below.

Respectfully submitted,
LAHIVE & COCKFIELD, LLP

Dated: July 21, 2005

By _____
Christopher J. McKenna
Registration No.: 53,302
Attorney For Applicant

Lahive & Cockfield, LLP
28 State Street
Boston, Massachusetts 02109
(617) 227-7400
(617) 742-4214 (Fax)